DOCUMENT RESUME

ED 200 640 TM 810 234

AUTHOR Duby, Paul B.
TITLE Attributions and Attributional Change: Effects of a Mastery Learning Instructional Approach.
PUB DATE Apr 81
NOTE 29p.; Paper presented at the Annual Meeting of the American Educational Research Association (65th, Los Angeles, CA, April 13-17, 1981).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Attendance; *Attribution Theory; Correlation; *Mastery Learning; *Models; Student Attitudes; Time Factors (Learning); Two Year Colleges
IDENTIFIERS *Adult Achievement Responsibility Scale; *Effort

ABSTRACT

The role of attributions in achievement situations is examined, as well as whether attributions can be altered by the implementation of specified instructional conditions. One hundred eighty nine students from four campuses of a city consolidated community college system were divided into two groups and taught over an 18-week semester by: (1) experienced teachers under mastery learning conditions; or (2) other techniques (controls). The Adult Achievement Responsibility (AAR) scale was used to collect attributional information and was administered in the third, tenth, and seventeenth weeks of instruction. An individual's AAR score was defined as the total number of internally oriented choices selected by the student. Student effort was assessed by observation of overt time-on-task behaviors, and by collecting data on the student's patterns of classroom absenteeism. Achievement was considered to be a cognitive measure of the student's level of performance on formative and summative examinations, as well as his or her final grade in a course. Results indicated that an individual's attributions are significantly related to measures of effort and achievement, but are manipulable only when certain learning conditions can be achieved. The 26-item AAT instrument is appended. (Author/RL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED200640

ATTRIBUTIONS AND ATTRIBUTIONAL CHANGE: EFFECTS OF A MASTERY LEARNING INSTRUCTIONAL APPROACH

Paul B. Duby

University of Illinois at Chicago Circle

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

P. B. Duby

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

TM 810 234

Paper presented at the Annual Meeting of the American Educational Research Association, Los Angeles, April, 1981.

Abstract

This research examined the role of attributions in meaningful achievement situations and investigated whether attributions could be effectively altered by the implementation of specified instructional conditions. In a study of 200 community college students, it was demonstrated that an individual's attributions were significantly related to measures of his effort and achievement. It was further shown that attributions were manipulable but only when certain learning conditions could be achieved. It was concluded that an attribution is an important variable because it is significantly related to performance, is manipulable, and is subject to conditions presently under the curricular control of the school.

The issue of personal control has long been a popular theme among researchers and theorists from a variety of disciplines. Competence and effectance, helplessness, and striving for superiority are representative of the many constructs which have been formulated to describe the degree to which an individual is able to manipulate and control the significant events taking place within his life space. Of these approaches, the one most germane to academic achievement situations consists of a set of general principles drawn together under the label of attribution theory. An attribution is, quite simply, an individual's perception of the causes of his academic successes and failures. The attributional approach posits that individuals differ in their causal perceptions about success and failure and that these attributions are related to performance on achievement related tasks.

While previous formulations have also been concerned with perceptions of personal control, these strategies have almost uniformly viewed them as stable and relatively permanent traits. The attributional approach, on the other hand, introduces the notion of variablity into the study of causal perceptions and seriously questions whether these personal percep-

tions are necessarily stable or fixed. That is, in attribution theory this construct is conceptualized as an alterable and, therefore, potentially manipulable variable.

In recent years, the number of attribution related studies has been expanding geometrically. Comprehensive reviews and discussions of the attributional research literature have been prepared by Bar-Tal (1975), Weiner (1974), and Duby (1980) and will not be presented here. The conclusion which one derives from such a review of the extant literature is that considerable energies have been expended and considerable ingenuity employed in attempts to exhaustively examine, dissect, and catalog each facet of the attributional construct. Upon analysis, however, it becomes clear that these past narrowly focused efforts have, almost uniformly, suffered from problems involving artificiality, lack of scope or depth, and lack of generalizability to educational theory and practice.

The present study represents a new level of development in attributional research in that it has investigated the role which attributions play in school learning by examining meaningful behaviors in achievement oriented situations under naturalistic conditions. Specifically, the objectives of this research were twofold: (1) to determine whether and to what extent attributional perceptions affect academic performance in actual school settings, and (2) to determine whether instructional and learning conditions could be manipulated in order to rapidly and effectively alter students' causal perceptions.

Theoretical Model

The theoretical model which guided this research is an amplification

of the earlier paradigms of Bloom (1971) and Anderson (1973) and attempts to clarify the linkages between what a student brings to a particular achievement situation and the amount of effort which he expends toward accomplishing that particular task. This conceptual framework is depicted in Figure 1.

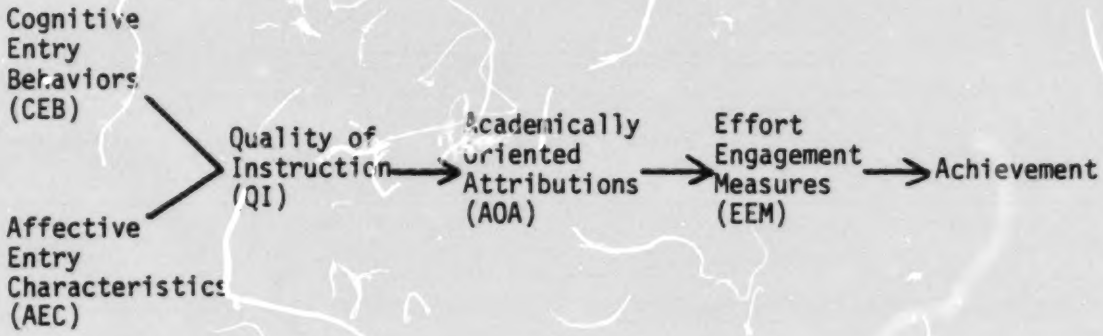

Figure 1. - A Schematic Representation of the Model

This theoretical model is designed to represent the process which takes place during a single instructional unit which is part of the sequence of units which make up a course. While the actual number of learning units may vary according to the type of instructional strategy which is employed, the most important characteristic of a learning unit is its strong linkages with the units which precede as well as follow it. That is, what has transpired in earlier learning modules is likely to have an effect upon a given learning sequence, which in turn, will influence the course of succeeding learning units. The interrelated nature of a series of learning units is schematically depicted in Figure 2.

It can be seen in Figure 2 that the sequence of events taking place in one learning unit will have implications for subsequent units. These

effects are seen to occur in a gradual and cumulative manner.

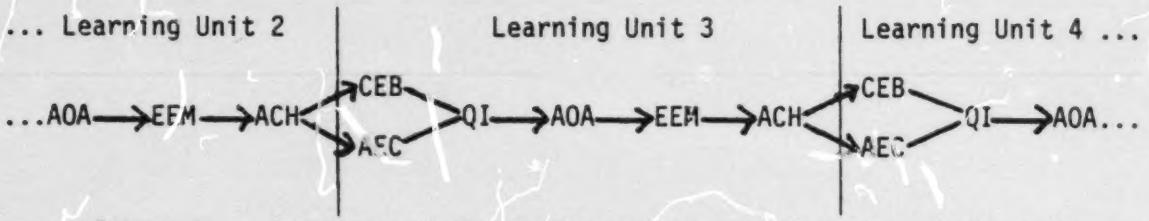

Figure 2. - A Schematic Representation of a Series of Learning Units

Thus, it was hypothesized that the learning process (including attributional development) would increasingly be affected as a consistent pattern emerged.

In order to evaluate the efficacy of this paradigm and to begin to investigate the degree to which the attributional notion has relevance for educational practice and theory, a comprehensive study was designed and implemented in actual classrooms in a community college setting.

Methodology

Thirteen classes of both first and second year community college students from four different content areas were selected from four different campuses of a consolidated community college system in the City of Chicago. The final sample of 189 students was drawn from two predominantly black, one predominantly white, and one racially integrated campus. Students in this system tend to be older than those in most four-year institutions (average age was 27), are likely to be employed, have dependents, and relatively poor academic backgrounds.

A modified pretest-posttest control group design was utilized in the present study. Four teachers (with previous successful experience with mastery learning) were selected to teach a total of seven classes

under mastery learning conditions. These conditions involved the use of frequent formative tests to identify learning weaknesses, the administration of correctives, and the retesting of the material.[1] The six control classes, on the other hand, were taught in accordance with the usual techniques employed by the four faculty members of the control group.

This research was conducted in one eighteen-week semester. Since students could not be randomly assigned to classes, it could not be assumed that students would be equally distributed with regard to prerequisites, affective characteristics, etc. An effort was made to control these potentially contaminating influences by experimentally balancing certain key variables, thereby minimizing their confounding impact. Thus, for all mastery-control pairings, the same courses (e.g., Psychology 100) were taught on the same campus. To this end, this technique appears to have been successful. A detailed comparison indicated that the two groups of students were extremely comparable at the onset of the study and brought similar backgrounds and performance related skills to the experimental setting.

Instrumentation

In this research effort, as in any study, the weight or confidence placed in the results must be tempered by the reliability, validity, and appropriateness of the assessment devices employed to gather evidence. With this in mind, one of the major concerns of this study involved the selec-

---

[1]For a comprehensive discussion of the mastery learning concept and approach, see Bloom (1968, 1971, 1976) and Block (1971).

tion or development, testing and refinement of all instruments employed here.[1] All instruments were field tested and evaluated at least once in the same community college setting utilized in the actual study. Where necessary, revisions and improvements were made to these assessment devices.

On the basis of content related as well as psychometric information generated in two pilot studies as well as the results from previous research efforts (e.g., Anderson, 1973; Coleman, et al., 1966; Crandall, et al., 1965; NCES, 1977; Yildiran, 1977), it was concluded that the major assessment techniques employed in this research met appropriate reliability and validity criteria.

The Adult Achievement Responsibility Scale

Because of its role in mediating antecedent conditions to effort and achievement outcomes, an academically oriented attribution was presented as the central variable in the theoretical model which guided this research. With this in mind, it was essential that an instrument be chosen which was highly valid and reliable, and was capable of reflecting changes in the underlying construct. After a careful review of the extant research literature, it was concluded that an appropriate measurement device would have to be developed. Previous attributional instruments suffered with problems relating to their validity and reliability, their appropriateness to academic achievement situations, and their ability to reflect change.

The final version of the Adult Achievement Responsibility scale (AAR) consists of twenty-six items. For each item, the student assigns a weight

---

[1]For a comprehensive discussion of the six variables employed in this study as well as a description of the instruments employed to assess these variables, see Duby (1980).

or percentage to each of the two given alternatives. The weights could range from 0 to 100 for each of the choices so long as the two combined to 100%. It was posited that a distributional type measurement device (such as the AAR) would be more likely to reflect rapid change in an underlying construct than would a forced-choice type of scale. It was anticipated that this innovative response format [derived from the work of Feldman-Summers and Kiesler (1974)] would also help to alleviate some of the problems and distortions caused by social desirability and other forms of response bias. An individual's AAR score was defined to be the total number of internally oriented choices selected by the student.[1]

The Adult Achievement Responsibility scale was administered by the classroom teacher in the third, tenth, and seventeenth weeks of the eighteen-week semester. In general, this device required about ten minutes to complete. Student comments and actions (including informal interviews) indicated that learners were quite interested and involved in the completion of this novel type of test. The Adult Achievement Responsibility scale is presented as an Appendix.

Results

One of the goals of the study was to examine the nature and strength of the relationship between attributions and effort and achievement. Effort was considered to be a behavior which indicated a learner's active involve-

[1] While not readily apparent to the test taker, the AAR is, in effect, scored as if it were a forced choice device. Since students distributed weights of from 0 to 100 for each of the alternatives, the following strategy was utilized in determining the total number of internal choices made. For each of the 26 internally oriented choices, a weight or percentage of 0 - 49 = 0; 50 = +1/2; and 51 - 100 = +1.

ment in the learning process. Student effort was assessed in two ways: by observation of overt time-on-task behaviors, and by collecting data on the students' patterns of classroom absenteeism. Achievement was considered to be a cognitive measure of the student's level of performance on formative and summative examinations as well as his final grade in a course. Attributional information was collected by means of the Adult Achievement Responsibility scale which was administered at the beginning, in the middle, and at the end of the eighteen-week period.

In order to examine the effect of academically oriented attributions upon performance and effort, the associational relationships between these measures were calculated. Tables 1, 2, and 3 present the zero-order correlation coefficients between the attributional measure and the measures of achievement, involvement, and absenteeism for the total population (N = 189).

It was hypothesized that academically oriented attributions would be related to achievement and also that this relationship would grow increasingly strong as the course developed. This relationship is examined in Table 1.

TABLE 1

ZERO-ORDER CORRELATIONS BETWEEN ATTRIBUTIONS AND ACHIEVEMENT

	AAR_1	AAR_2	AAR_3
Cognitive Pre-Test	.05	.02	.21*[a]
Mid-Term Examination	.00	.19*	.49*
Final Examination	-.14	.13	.51*
Course Grade	-.16	.15	.59*

[a]The following convention for level of significance is used throughout the present study: * = $p < .05$.

The results clearly indicated that the very weak bonds between the first attributional measure and the initial measure of achievement grew increasingly strong in subsequent measurements of these variables. It can be seen that by the middle of the course, a statistically significant correlation existed between the relevant attributional and achievement measures (i.e., AAR_2 and the mid-term examination). By the completion of the course, the final attributional measure explained 26% of the variance in final examination scores and 35% of the variance in course grades.

It was hypothesized that attributions would be related to involvement (as measured by overt time-on-task) and that this relationship would also grow increasingly strong over the duration of the semester. As can be seen in Table 2, which depicts the results for the entire experimental population, individuals' causal attributions were increasingly related to their levels of involvement.

TABLE 2

ZERO-ORDER CORRELATIONS BETWEEN ATTRIBUTIONS AND TIME-ON-TASK

	AAR_1	AAR_2	AAR_3
$Time\text{-}on\text{-}Task_1$	.06	.00	.09
$Time\text{-}on\text{-}Task_2$	-.03	.12	.30*
$Time\text{-}on\text{-}task_3$	-.07	.19	.47*

While the relationship between causal attributions and involvement was not as strong as in the case of achievement, it was significantly different from zero by the final time-on-task observation. AAR_3 explained

about 22% of the variance in students' overt time-on-task behaviors and, as anticipated, the relationship between these two variables had strengthened as the course developed.

It was hypothesized that an individual's causal attributions would also be related to his expenditure of effort (measured here by patterns of absenteeism). It was expected that a student's attributions would be negatively correlated with his rate of absenteeism, and also that the strength of this negative relationship would become progressively stronger as the course transpired. As can be seen in Table 3, the correlations between these variables did not reach a level of statistical significance.

TABLE 3

ZERO-ORDER CORRELATIONS BETWEEN ATTRIBUTIONS AND ABSENTEEISM

	AAR_1	AAR_2	AAR_3
$Absent_1$	.12	.16	-.01
$Absent_2$	.02	-.07	-.08
$Absent_3$	.09	-.10	-.14

While these two variables were not significantly related, the pattern of their interrelationship did, nonetheless, work in the expected direction. That is, the negative relationship between attributions and absenteeism became increasingly strong over the course of the experimental period.

In sum, it has been clearly shown that an individual's causal attributions are systematically related to measures of his achievement, involvement, and to a lesser degree, his effort. In each case it was demonstrated

that as the course progressed, the relationship between the examined variables and academically oriented attributions did grow progressively stronger.

Attributions and Achievement Indices: A Causal Linkage

As can be seen in the theoretical model depicted in Figure 1 (p. 3), attributions are not only linked to performance indices but are hypothesized to be an important determinant of effort and achievement. While the results depicted in Tables 1, 2, and 3 provide strong support for an associational relationship between these variables, causal inference cannot be drawn from these data alone. Kukla (1972) explicitly summarizes the nature of the causal argument which must be made:

> In principle, this cognitive hypothesis is readily testable: if attribution determines behavior, then a change in attribution will result in a corresponding change in behavior. Thus, if a high achiever acts the way he does because of the manner in which he typically attributes causality, then any operation which increases the likelihood of such an attribution will also increase the likelihood of the behavior known to be characteristic of high achievers (p. 169).

Thus, in order to establish a cause and effect relationship, it is necessary to demonstrate that changes observed in one variable (i.e., achievement) are the result of a manipulated change made to another variable (i.e., causal attributions).

In the present study, certain conditions (e.g., the use of feedback-corrective procedures) were imposed on the teaching and learning in the

---

[1]The possible causal linkage between achievement and attributions also needs to be examined (i.e., an attribution viewed as a dependent variable). This relationship has been examined in detail (Duby, 1980) but the results will not be reported here.

experimental classes. These conditions, in addition to the competitive processes naturally in operation within the classroom, were expected to produce rapid and meaningful changes in students' causal attributions. In order to support the causal linkage it was necessary to show that attributional changes were taking place but, more importantly, it was also necessary to demonstrate that the increases or decreases which took place in students' attributional levels were consistently mirrored by gains or losses in their rate of involvement, in the frequency of their absenteeism, and in the amount they learned. If it could be consistently demonstrated that changes in performance indices systematically paralleled those produced in academically oriented attributions, then the findings can be regarded as evidence of the hypothesized causal link.

After reviewing the attribution related data generated in the present work, students were classified into one of three attributional categories:

(1) Those who exhibited increases of 1.5 points or more in their attributional levels (over the duration of the experimental period),

(2) Those whose attributional scores declined by 1.5 points or more,

(3) Those whose attributional scores remained virtually at the same level (i.e., changed less than 1.5 points in either direction).

The cutoff scores of ± 1.5 were chosen because they separate the experimental population into three comparably sized samples and because a difference of 1.5 represents one-half of a standard deviation on the attributional measure.

Utilizing these attributional classifications, an examination was made (for the total experimental population - N = 189) of the changes which took place in involvement, effort and achievement over the duration of the experimental period. It was anticipated that meaningful changes produced in

attributions (i.e., those of one-half standard deviation or more) would lead to meaningful and observable changes in behavior. The results are seen to provide clear and consistent support for the hypothesized causal linkage between attributions and performance indices.

It was expected that as an individual's attributions became increasingly more internal, his academic behaviors would increasingly reflect the behavior patterns of high achievers (i.e., high grades, high time-on-task, and low absenteeism). Conversely, it was felt that as a student's attributions became progressively more external, his academic behaviors would be increasingly reflective of those of low achievers (i.e., poor academic performance, low involvement, and high absenteeism). A middle position was expected for those whose attributional views remained largely unchanged.

The most important overall finding from these comparative analyses are the patterns exhibited by the attributional gain, same, and loss groups. Of the three groups of students, those individuals who demonstrated meaningful gains (i.e., increases of one-half standard deviation or more) on the attributional dimension showed the largest increases in their rates of time-on-task, the smallest increases in their rates of absenteeism, and the smallest losses in achievement.[1] Exactly the opposite was demonstrated by the students whose attributional scores significantly declined (i.e., losses of one-half standard deviation or more). Of the three subpopulations, these individuals suffered the largest losses in their rates of time-on-task and levels of

---

[1]The results indicate that, across the thirteen classes, the final summative tests were typically more difficult than the initial or mid-term examinations.

achievement, and the largest gains in their rates of absenteeism. The students whose attributional views changed little, occupied a middle position on each of the achievement related criteria between the performance gains of the attributional gain group and the performance losses of the attributional loss group.

With regard to the final observations or measures of student achievement, absenteeism, and involvement, a second very clear profile emerges (see Figure 3). It was expected that:

(1) The average final involvement level would be highest in the attributional gain group and lowest in the attributional loss group,

(2) The average final absentee rate would be lowest in the attributional gain group and highest in the attributional loss group,

(3) The average final examination score and the overall grade point average would be highest in the attributional gain group and lowest in the attributional loss group.

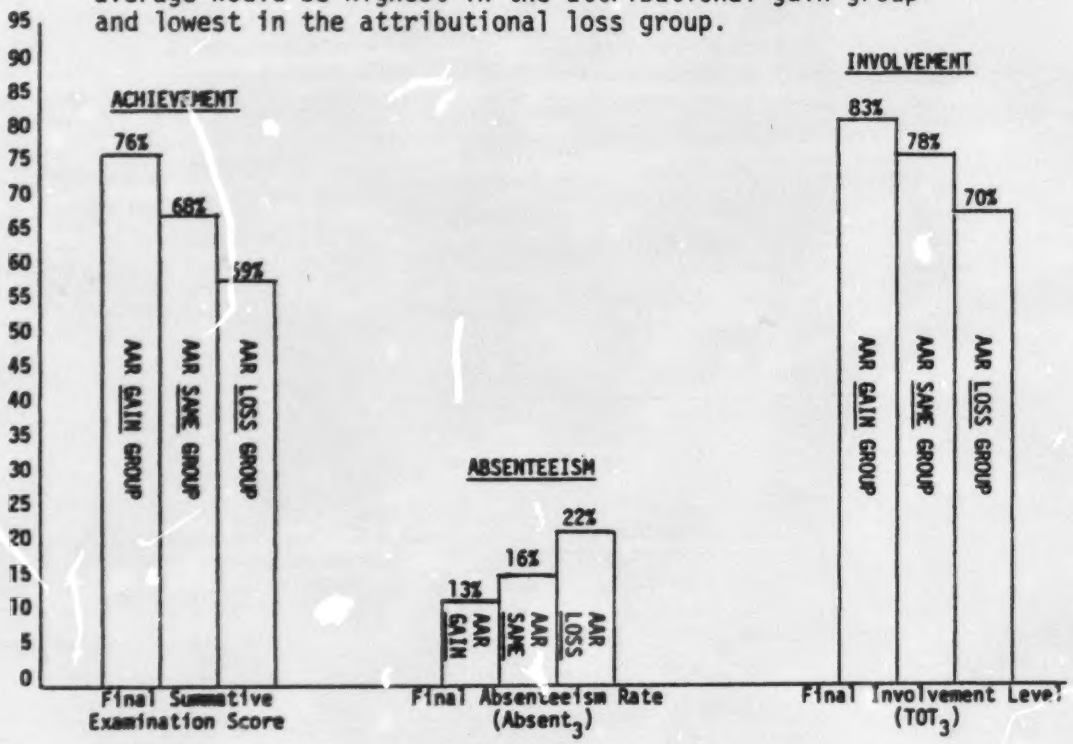

Figure 3: A Comparison of Selected Performance Indices for the Attributional Gain, Same, and Loss Groups

An examination of these data and Figure 3 indicate that with only one exception (i.e., the withdrawal rate was equally low in both the attributional Gain and Same groups), the expected relationships are clearly present for each of the performance criteria. Once again, the results in the attributional "no-change" group fell in between those of the attributional gain and loss groups.

The final pattern which emerged from these data involved the distribution of individuals within each attributional group who gain, lose, or show no change on each of the performance criteria. For example, the percentage of students within each attributional category whose achievement scores rose, fell, or remained the same was calculated. This procedure was implemented for each of the performance criteria. In comparing the three attributional groups, it was expected that certain specific patterns or distributions would be found.

With only minor variations, the expected patterns of distributions were found. As anticipated, the attributional gain group possessed the largest percentage of individuals whose involvement and achievement levels increased and whose absenteeism rates diminished. This group also had the smallest percentage of students whose involvement and achievement levels decreased and whose absenteeism rates increased. Exactly the opposite pattern was found for the attributional loss group. Finally, the same or no-change group occupied the expected transitional position on each of the achievement criteria.

Summary

From the above data it is quite evident that increases or decreases which take place in students' academically oriented attributions are

paralleled by gains or losses in the amounts which they learn, in their rates of involvement, and in the frequency of their absenteeism. Support has been provided for the contention that changes to a more internal orientation are related to positive changes in achievement related behaviors, and that attributional changes in a more external direction are related to fewer changes in achievement like activities. In addition to the correlational findings cited in Tables 1, 2, and 3, the clear and consistent patterns discussed above provide strong support for the existence of the hypothesized causal linkage between attributions and subsequent performance. On the basis of these results, it can be inferred that changes in performance indices are attributable, at least in part, to changes which take place in subjects' causal perceptions.

Alterability of attributions

The second main objective of the study was to investigate whether academically oriented attributions could be meaningfully altered on a short-term basis (within one 18-week semester). This question is considered to be a critical one because it explores to what extent attributions can play a role in school learning. That is, it investigates the following question: "Are academically oriented attributions manipulable and therefore subject to the instructional and curricular control of the school?" If it were demonstrated that attributions were strongly related to effort and achievement but were highly resistant to change, then this variable would have little practical impact upon education. On the other hand, if it can be shown that attributions are related to effort and achievement and are alterable on a short-term basis when certain instructional conditions can

be achieved, then a potentially very powerful means may have been identified for maximizing achievement related performance.

Learning Conditions and Attributional Development

It has been hypothesized above that attributional growth versus attributional stability would be related to the presence or absence of certain special teacher-imposed learning conditions. Since these instructional arrangements were not in effect in the control group, it was expected that little change would occur in the learners' causal attributions. A direct comparison of the patterns of attributional development in the control and mastery groups would provide support for this hypothesized linkage. However, it must be stated explicitly that the present research is not a study of mastery versus control approaches to instruction. Rather, it is an in-depth investigation of the attributional construct: its role in school learning and its linkages to other achievement related variables.

While it could be shown that rapid attributional change did take place in the overall mastery group,[1] it is clear that not all mastery students made use of available feedback and correctives, achieved well, or became more internal in their causal perceptions. It is therefore necessary to distinguish between the mastery students who systematically made use of the learning conditions and those who did not.

The minimum conditions which were utilized to divide the total mastery population into two subgroups were set down by the present researcher and

---

[1] See Duby (1980) for a complete summary of these data (especially Appendix B).

involved manipulable variables which were subject to the instructional control of the teacher. These minimum conditions were: the successful completion of at least 50% of the formative tests at a mastery level (80% or higher)[1] and an attendance rate of at least 75%. Only when both of these requirements were met was an individual placed into the mastery subgroup who "met minimum conditions."[2] Otherwise, a student was placed into the mastery subgroup which "did not meet minimum requirements." Utilizing the above criteria, it was found that 61 students (57%) met minimum conditions, while 46 (43%) did not.[3]

The mastery met minimum conditions subgroup is considered to be the only experimental population to systematically and effectively utilize the available instructional and learning conditions. The students in the mastery subgroup who did not meet minimum requirements as well as the non-mastery students, serve as the "controls." Thus, this study, in effect employed one successful treatment group for whom rapid and meaningful attributional growth was anticipated, and two "control" populations for whom little attributional change was expected.

The initial comparability of the three subgroups was evaluated across a number of areas. The results from these detailed comparisons indicated

---

[1]The number of formative tests ranged from four to ten across the seven mastery learning classes.

[2]It was found that all students who had achieved mastery on 50% or more of the formative tests also had an attendance rate of at least 75%. However, the converse did not hold.

[3]This dual classification of mastery learning students has been used previously in a number of studies. See, for example, Jones, et al., 1975.

that the three groups were very similar with regard to all the demographic and performance related variables. Despite some differences in the affective area (i.e., the control group demonstrated higher initial subject specific affect than either of the mastery subgroups), it was concluded that the three groups were very comparable at the onset of the study, and brought similar backgrounds and performance related skills to the experimental setting.

Results

If attributional development is strongly related to the imposed instructional conditions and not to other generalized factors in mastery learning (e.g., simple participation in a mastery program or the knowledge that all in the mastery class can achieve at a high level), then the attributional levels in the mastery met minimum conditions subgroup should reflect rapid and meaningful growth in attributional perceptions. The attributional levels of the students in the did not meet minimum conditions subgroup, like those of the students in the control classes, should remain stable.

Table 4 examines the development of academically oriented attributions at different stages of the instructional sequence for the control group as well as the two mastery subgroups.

As can be seen in Table 4, the results provide strong and clear-cut evidence that academically oriented attributions are alterable on a short-term basis. Further, these findings demonstrate that the teacher imposed instructional and learning conditions are strongly linked to the development of attributional perceptions.

TABLE 4

AN ANALYSIS OF ATTRIBUTIONAL DEVELOPMENT
IN THREE EXPERIMENTAL SUBGROUPS

		Mastery Who Met Minimum Conditions (MM)	Control (C)	Mastery Who Did Not Meet Minimum Requirements (MN)	df	F
	N	61	82	46	(2,186)	.82
AAR_1	$\bar{x}$	17.79	18.34	18.23		
	s	2.43	2.76	2.54		
	N	49	66	34	(2,146)	.55
AAR_2	$\bar{x}$	19.29	18.99	18.69		
	s	2.54	2.47	2.88		
	N	61	82	46	(2,186)	13.26*[a]
AAR_3	$\bar{x}$	20.32	18.73	18.22		
	s	1.74	2.66	2.16		
AAR_c		+2.53	+.39	-.01	(2,186)	8.61*[a]
	t	6.61*	.92	-.02		

[a]The following is a summary of multiple comparisons applicable to both the final attributional measure and the attributional gain score: MM > C*, MM > MN*, C > MN.

It can be seen that a dramatic change has taken place in the attributional views of the students who met minimum conditions. This mastery learning subgroup demonstrated a practically and statistically significant increase in their attributions (i.e., a gain of over one standard deviation in their AAR scores). In contrast, it can be seen that virtually no change has occurred

in the attributional levels of the other two experimental groups. In fact, the attributional scores of both the control group and the mastery subgroup who did not meet minimum requirements actually declined from the middle (AAR_2) to the end (AAR_3) of the course. That is, their attributional views moved toward a more external orientation.

The attributional levels of the three groups were also directly compared. The results of the analysis of variance indicate that while the attributional views of the three groups were very similar at the onset of the course, the differences in attributional scores among them were statistically significant by the completion of the experimental period. The differences in attributional gain scores were also found to be significant. Since the hypothesis of equal means was rejected in both cases by the analysis of variance, multiple comparisons were completed (Bock, 1975, p. 267). The results indicate that the differences between the attributional levels (both final and gain scores) of the mastery met minimum conditions subgroup were significantly different from those of both the control group and the mastery did not meet minimum requirements subgroup. Significant differences were not found to exist between the two "control" populations.

From Table 4 it can be seen that the three experimental populations exhibited very different patterns of attributional development. These patterns are graphically depicted in Figure 4. On the basis of these findings, it can be concluded that rapid and meaningful attributional change took place neither in the entire experimental population nor in the whole mastery group but rather in a subset of this latter population with whom a particular set of instructional and learning conditions were successfully implemented. This

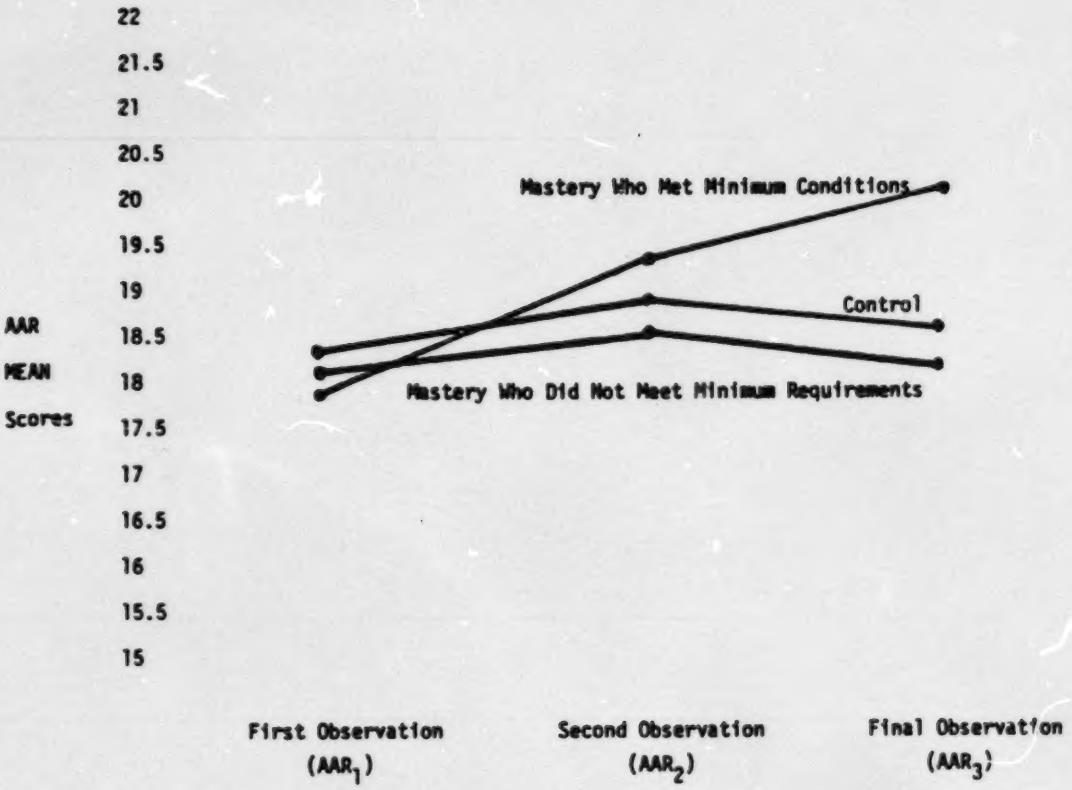

Figure 4. A Comparison of the Attributional Development of Three Groups of Learners

result is seen as extremely important because it indicates that academically oriented attributions can be affected by conditions which are presently under the instructional and curricular control of the school.

Summary

The second objective of this study was considered to be its most important in that it explored the extent to which attributions might play a role in school learning. In order to demonstrate that attributions could have a practical impact upon real school situations, it was necessary to

show that this construct was not only related to effort and achievement but also that attributions could be rapidly and meaningfully altered. The results have indicated that attributions are linked to achievement related variables and are manipulable on a relatively short-term basis. Thus, in at least a sample classroom situation, it has been demonstrated that attributions can be made subject to the control of the school.

The major implications to be drawn from this research are educationally oriented. The present findings suggest that instructional efforts should be directed at providing the student with learning experiences which encourage him to clarify and define his role in achievement situations. That is, activities should be designed so as to provide the learner with the opportunity to frequently assess his ability to determine his academic outcomes. The consistency of feedback appears to be a key element in promoting attributional growth. Therefore, use of instructional approaches which provide evidence of personal involvement as well as successful performance should be encouraged since they tend to result in both academic and attributional development. The mastery learning strategy which was employed in this research is one of a number of instructional approaches which enable a large majority of students to reach high levels of achievement. It is suggested that these approaches can also be successfully employed to promote attributional growth.

References

Anderson, L.W. "Time and School Learning." Unpublisned doctoral dissertation, University of Chicago, 1973.

Bar-Tal, D. "Individual Differences and Attributional Analysis of Achievement-Related Behavior." Pittsburgh: University of Pittsburgh, Learning Research and Development Center, 1975.

Block, J.H. (Ed.). Mastery Learning:Theory and Practice. New York: Holt, Rinehart, and Winston, 1971.

Bloom, B.S. Human Characteristics and School Learning. New York: McGraw-Hill, 1976.

Bloom, B.S. "Individual Differences in School Achievement: A Vanishing Point?" Education at Chicago, 1971, 1, 4 - 14.

Bloom, B.S. "Learning for Mastery." Evaluation Comment- UCLA Center for the Study of Evaluation of Instructional Programs, 1968, 1.

Bock, R.D. Multivariate Statistical Methods in Behavioral Research. New York: McGraw-Hill, 1975.

Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPartland, J., Mood, A.M., Weinfeld, F.D., & York, R.L. "Equality of Educational Opportunity." Washington, D.C.: United States Department of Health, Education, and Welfare, 1966.

Crandall, V.C., Katkovsky, W., & Crandall, V.J. "Children's Beliefs in their own Control of Reinforcements in Intellectual-Academic Achievement Situations." Child Development, 1965, 36, 91 - 109.

Duby, P.B. "An Investigation of the Mediating Role of Causal Attributions in School Learning." Unpublished doctoral dissertation, University of Chicago, 1980.

Jones, E.L. "Mastery Learning: A Strategy for Academic Success in a Community College." ERIC, Topical Paper No. 53, 1975.

Kukla, A. "Attributional Determinants of Achievement-Related Behavior." Journal of Personality and Social Psychology, 1972, 21, 166 - 174.

National Center for Education Statistics, "Group Profiles on Self-Esteem, Locus of Control, and Life Goals." National Longitudinal Study of High School Seniors. Washington, D.C.: H.E.W., 1977.

Weiner, B. Achievement Motivation and Attribution Theory. Morristown, N.J.: General Learning Press, 1974.

Yildiran, G. "The Effects of Level of Cognitive Achievement on Selected Learning Criteria Under Mastery Learning and Normal Classroom Instruction." Unpublished doctoral dissertation, University of Chicago, 1977.

Appendix

STUDENT ATTRIBUTIONAL SURVEY

(The Adult Achievement Responsibility Scale)

Name _____

This questionnaire asks you to describe your way of viewing certain schooling processes. While the following questions may be unlike any you have seen before, there are no right or wrong answers. What is important is the way you view each question.

This questionnaire will remain absolutely confidential. This survey and your reactions to it will have nothing whatsoever to do with your grade in this course. You should be able to complete the following 26 items in about 10 minutes. Please carefully read the directions before marking your answers. Your help and patience is greatly appreciated. Please answer all questions.

Directions: The following 26 items ask you to assign a weight or percentage to each of the two given choices. The following is an illustration.

If a baseball player goes into a batting slump, is it because:

_____a. he is swinging too hard and has picked up bad batting habits

or

_____b he has lost confidence in his ability to hit?

I would personally assign a greater responsibility for the slump to choice b. Therefore, I would indicate something like:

20% a.
80% b.

Your view might be quite different.
The percentages would vary according to the strength with which you see each alternative as contributing to the slump. For example, you might see choice a. as primarily responsible and might give it 85%. You would then give choice b. a figure if 15%.

The only restriction is that the two percentages must add up to 100%.
Please feel free to ask questions.

1. When you do well on a test at school, is it
_____a. because of your preparation for it, or
_____b. because the test was really easy?

2. If a fellow student tells you that you are bright, is it
_____a. because of your ability, or
_____b. because he is looking for your help with something?

3. Do you feel that when good things happen to you in school they happen
_____a. because you are in the right place at the right time, or
_____b. because of your effort?

ATTRIBUTIONAL SURVEY--Continued

4. If you solve a problem or exercise, is it
   _____a. because you work on it carefully, or
   _____b. because it isn't a very complex problem?

5. When you learn something in school, is it
   _____a. because you pay close attention, or
   _____b. because of the teacher's clear explanations?

6. When you have difficulty with a certain test, is it
   _____a. because a number of things interfered with your studying, or
   _____b. because you didn't really understand the subject matter?

7. If your teacher tells you that you are bright or a good learner, is it
   _____a. because of something you did, or
   _____b. because he is in a particularly good mood?

8. When you forget something you heard in class, is it
   _____a. because the teacher didn't explain it very clearly, or
   _____b. because of your lack of concentration?

9. You are explaining how to solve a problem to a friend and he learns how to do it quickly. Would that happen
   _____a. because of your ability to explain it well, or
   _____b. because he is able to understand it?

10. If a teacher says to you "Your work is fine", is it
    _____a. because your work really is good, or
    _____b. something teachers usually say to encourage students?

11. When you aren't doing well on your schoolwork, is it
    _____a. because you can't get used to the teacher's style of teaching (his approach, etc.), or
    _____b. because your work isn't very good?

12. When you do better than usual in a particular subject, is it
    _____a. because you made an extra effort, or
    _____b. because someone helped you?

13. When you find it easy to work certain problems, is it
    _____a. because the text was well written and good examples were given, or
    _____b. because you have kept up with the material and can see how things all fit together?

14. When you read an assignment but can't remember much of it, is it
    _____a. because you really weren't interested in it, or
    _____b. because the assignment was too complex and too long?

15. When you have trouble understanding some school material,is it
    _____a. because the teacher only confused you with his remarks, or
    _____b. because you weren't paying very close attention?

ATTRIBUTIONAL SURVEY--Continued

16. If a student tells you that what you said in class wasn't very bright, was it
_____a. because you didn't clearly think out what you were going to say, or
_____b. because he was just taking out his frustrations on you?

17. When you do poorly on an oral or written quiz, is it
_____a. because of your preparation for it, or
_____b. because it was too difficult and went beyond the material you were supposed to study?

18. If you can't complete an exercise or problem, is it
_____a. because you're not especially good at this type of problem, or
_____b. because the instructions aren't written clearly enough?

19. If you were to become a teacher, doctor, or scientist would this happen
_____a. because of your dedication to your work, or
_____b. because of the help of others at crucial times?

20. When you remember something you hear in class, is it
_____a. because you are paying attention, or
_____b. because the teacher's explanation was really logical?

21. You are showing a classmate how to answer a particularly difficult problem but he can't seem to get the hang of it, is it
_____a. because it is probably too advanced for him, or
_____b. because you don't understand it well enough to explain it clearly?

22. You don't do as well as usual in a particular subject, is it
_____a. because you weren't as careful and persistent as usual, or
_____b. because something bothered you and kept you from working?

23. When you're not sure about the answer to a question which your teacher asks you and the answer you give is wrong, is it
_____a. because he was more particular and demanding than usual, or
_____b. because you answered without really thinking it through?

24. When you find it hard to finish certain assignments, is it
_____a. because you hadn't studied well enough before you tried them, or
_____b. because the problems were too complicated?

25. If people think you're intelligent, is it
_____a. because they happen to like you, or
_____b. because you generally act that way?

26. If a teacher says to you "Try to do better", is it
_____a. just a motivational device teachers are always using, or
_____b. because your work shows that you haven't been putting as much time as usual into your work?